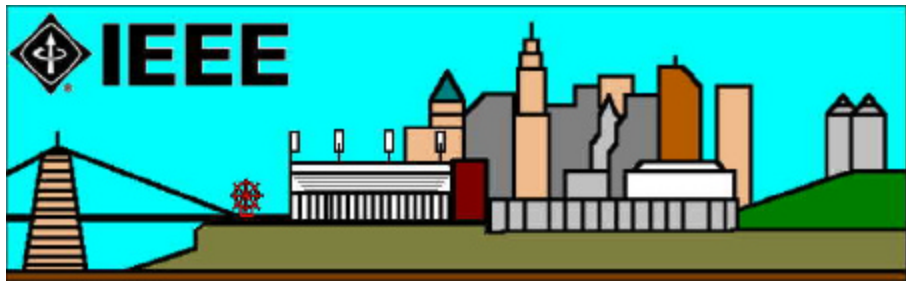


IEEE CINCINNATI
SECTION
NEWSLETTER
JANUARY 2003



JANUARY MEETING

LED TECHNOLOGY

DATE: Thursday, January 23, 2003

PLACE : Raffel's – 10160 Reading Road (see below for directions)

TIME : 5:30 p.m. to 7:00 p.m. - Social Time/Dinner
7:00 p.m. to 8:30 p.m. - Program

COST FOR DINNER: \$15.00 which includes a buffet dinner, soft drinks/coffee, tax & gratuity.
Cost for student members - \$10.00

MENU SELECTIONS: Maryland Crab Cakes, Center Cut Chops with Baked Apples, Country Fried Chicken, Broccoli & Carrot Casserole, Buttered Corn, Whipped Potatoes with Gravy, Tossed Salad with Dressings, Rolls & Butter, Apple Dumplings, Coffee, Tea Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks. Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately 3/4 of a mile to Reading Rd. and turn right on Reading.

Please call the Cincinnati Section Voice Mailbox at 513-629-9380, by **Noon, Tuesday, January 21, 2003** if you plan to attend. Please leave your **Name, IEEE Member Number,** and **a daytime telephone number.**

ABOUT THE PRESENTATION: This month's meeting topic is High-Power LEDs and will feature a presentation by Mr. Ted Lowe of Lumileds Lighting, a Joint Venture of Agilent Technologies and Philips Lighting. Lumileds is a vertically integrated manufacture and the leader in high-power LED development. Lumileds Lighting introduced the world's first 1 watt LED, called Luxeon (tm) over a year ago, and has recently introduced a 5 watt version known as Luxeon V. Many experts in the lighting field refer to High-Power LEDs as the greatest illumination invention since the fluorescent lamp.

The presentation will cover:

- Lumileds Lighting company overview
- LED Technology Update, including:
- LED Features, Advantages, Benefits
- AlInGaP LED Materials
- InGaN LED Materials
- LED Power Packaging
- LED Flux Performance
- Light Source Efficiency Comparisons

- Degradation Issues
- Design Issues
- LED Application Photos (current and future)
- Lumileds Current and Future Products
- LED Demonstrations (seeing is believing!)
- Q&A

Come and learn about and see the latest in High-Power LED technology.

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

John Abanto	Edward E. Getty	William R. Prunty
Akira Akasaka	Mike Graf	Reza Raeisi
Nitin Auluck	Herman Harrison	Walter D. Rawle
Suguna Bommaraju	John D. Hawkinson	Jonathan D. Reichart
Harold G. Burkett	David J. Klotzkin	John B. Sampson
Jamie G. Carper	Paula L. Landry	Subha Sasidharan
Andrew R. Cole	Charles T. Lester	Uday Sekar
Karen Creamer	Dianna Y. Liu	Ehsan O. Sheybani
Kenneth B. Davenport	Kenneth J. Macke	Rob Silber
Gregory J. Deitz	Joseph R. Meiners	Euell Tochip
Charles L. Dunn	Manish J. Mistry	Christopher T. Tynan
Maurice H. Dupont	Sherif S. Abdel Momen	Harish Chander R. Vutukuru
Robert L. Eigel	Kelly Monterosso	Robert T. Wardell
Gary L. Flanagan	Larry E. Morgan	Sudhir S. Warriar
Feng Gao	Steven E. Morton	Gary R. Wehrle
	Gary E. Peck	

We wish to extend our welcome to all of our Section's new members!!!

CINCINNATI SECTION OFFICER SEARCH!!

The Cincinnati Section is in need of a Vice Chairman on the Executive Committee. If you would be interested in participating in your Section, or if you have any questions about the position, please contact the Section's Chair, Fred Nadeau (f.nadeau@ieee.org or 937-289-2800) or Past Chair, Tom Grau (t.grau@ieee.org or 513-899-3181).

EXECUTIVE COMMITTEE MEETING - JANUARY 16, 2003

The next Executive Committee Meeting is scheduled for **January 16, 2003 (5:30 pm)** at Parker's Blue Ash Grill. All EXCOM Members are urged to attend as your input is needed for conducting Section business. See you there!

IEEE-USA's PRESIDENT'S COLUMN - JANUARY 2003

Jim V. Leonard, P.E.



2003 IEEE-USA President

Greetings to U.S. IEEE members. I look forward to serving as your president in 2003.

It looks like our U.S. IEEE membership of about 235,000 is probably only about 25 percent of the market. So my first request is that you join the IEEE Member-Get-A-Member program and sign up at least one new member.

With the terrible events of September 11, 2001, the outlook for the U.S. has drastically changed. We now have a frightful and fanatical enemy. Our government is setting up a homeland security force to help protect us, and IEEE-USA's Technical Policy Council will assist in the effort.

The 9/11 events affected us all. The following week, my aunt and uncle, Anne and Bert Souther, were brutally murdered in their La Habre, Calif., home. The murders are still an unsolved mystery. So, while it's very important for IEEE-USA to plan and support professional careers, it means little if terrorists and other criminals threaten our personal security.

In 2003, we will also look at heroes within IEEE. Our first retreat will be held at the Thomas Edison Museum, named in honor of the man who helped found IEEE. We will also celebrate Pearl Harbor Day there with a visit to meet George Elliott, Jr., an SCR-270B radar operator at the Opana Point (Hawaii) radar site, which first detected the Japanese attack on December 7, 1941. We helped establish the site as an IEEE Historical Milestone during National Engineers Week, 2000.

We hope to hold IEEE-USA Operating Committee meetings at the U.S. Military Academy in West Point, N.Y., and the U.S. Air Force Academy in Colorado Springs, Colo. IEEE has student branches at each one.

In late March, we will hold a Professional Development Conference and IEEE-USA Leadership Workshop at the Seattle Airport Hilton. Please consider sending a PACE representative from each section.

Our CARE program is a grassroots effort to urge U.S. IEEE members to visit their congressional representatives in their home district.

Unemployment among U.S. engineers has climbed steadily over the past several years. We presented our concerns over this and other workforce issues at the National Academies' Pan-Organizational Summit on U.S. Science and Engineering Workforce in November.

We will lobby Congress to restore the yearly 65,000 H1B visa limit (now 195,000) to help U.S. engineers and computer scientists with increased employment opportunities. And we hope to re-establish IEEE-USA employment assistance at the Section level.

Log on to the IEEE-USA Web site (www.ieeeusa.org) and take a look at our ongoing activities and decide how you, our most valued asset, can help us help you.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

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John V. L. Hogan (1890-1960)

The July 1913 issue of the first volume of the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper on the heterodyne receiving system by John V. L. Hogan, at the time a research engineer with the National Electric Signaling Company (NESCO). Along with Robert H. Marriott and Alfred N. Goldsmith, Hogan had been instrumental in founding the IRE the previous year, and he later served as IRE president in 1920.

In his paper, Hogan discussed the results of recent radio tests between the U.S. Navy's transmitting station in Arlington, Virginia, and the USS Salem, a Navy cruiser. He stated that these tests had marked the public debut of the heterodyne system, an invention which he credited to Reginald A. Fessenden. Hogan used graphs to show how two waves of different frequency could combine to produce a periodic variation with a beat frequency equal to the difference in the frequencies of the component waves. He included circuit diagrams of various heterodyne receivers where a signal produced by a local radio-frequency source was mixed with a received signal. He pointed out that the heterodyne process could produce a much stronger audio-frequency signal than a receiver which did not use a local source, such as a radio alternator or arc converter.

Hogan stated that the heterodyne principle in radio was covered by a patent issued to Fessenden in 1902 and that it was a "fundamental-invention" of greater significance than subsequent improvements made by others. In an IRE paper on the heterodyne receiver published in September 1915, Hogan reported that the development of the de Forest audion into a "singing relay" had further enhanced the value of the heterodyne receiver. He praised Edwin H. Armstrong's contribution to regenerative oscillators, which provided an inexpensive local source for heterodyne receivers.

Hogan was born in Philadelphia, Pennsylvania, and constructed his first wireless station in 1902. He worked as a laboratory assistant to Lee de Forest for a time and participated in the first public demonstration of the audion (triode) in 1907. Hogan enrolled at Yale University in 1908 but dropped out without a degree to work for NESCO and Reginald Fessenden. Hogan remained with NESCO and its successor, the International Radio Telegraph Company, until 1921. In 1912, he received a patent on single-control tuning, which he assigned to NESCO. He later regained control of the patent and received royalties from numerous manufacturers of radio broadcast receivers during the 1920's. In 1921, he established a consulting engineering practice with clients that included Westinghouse Electric Company and commercial broadcasting stations.

Beginning in 1928, Hogan turned his attention to radio facsimile and television using his own experimental station, W2XR, to tryout inventions. Fond of classical music, he was impressed by the fidelity achieved by Armstrong's frequency-modulation system, introduced in the mid 1930's. Hogan converted his station to FM and began broadcasting in New York City in 1936 (WQXR). He sold the station to the New York Times in 1944. During World War II, he served as special assistant to Vannevar Bush, director of the Office of Scientific Research and Development. After the war, Hogan resumed work on facsimile transmission systems. He died December 29, 1960, in Forest Hills, New York.

*James E. Brittain
School of History , Technology, and Society
Georgia Institute of Technology*

ELECTRICAL WORLD MAGAZINE

125th ANNIVERSARY

by Bob Morrison, Editor

In 1999, Electrical World Magazine celebrated their 125th anniversary as one of the premier publications for the Electric Power Industry. They presented a history of significant People, Companies, Industry Changes and Innovative Technologies which have served to define the current status of the Electric Power Industry. In the next few months, their article will be reprinted in this *newsletter* (permission granted by McGraw-Hill Publishing Co.)

TECHNOLOGY

Jet engine/gas turbine

"Suck, squeeze, bang, blow, that's what makes an engine go." The common engineering school ditty which describes the operation of jet engines, also adequately describes the operation of the earthbound gas turbine/generator. The gas turbine, developed by Frank Whittle in 1928, intakes air, compresses it, and ignites it. The resulting high-pressure gases are then used to spin the turbines of the generator. Since they were first placed in service as stationary electric generators in 1961, gas turbines have provided an efficient alternative to steam boilers.

Going fission

The joke at the University of Chicago football games was that ticket holders really had the hottest seats in town. That was because the world's first nuclear reactor, Chicago Pile-1, was built in a makeshift lab under Stagg Field, the university's old football stadium.

In 1945, when nuclear power burst on the world scene, reactions were a mixture of awe and suspicion. To appease the population, and to harness the powerful technology, the US government formed the Atomic Energy Commission to expound on peacetime possibilities of nuclear.

The agency's conclusion was that because the technology for nuclear reactors already existed, it would not be difficult to use it to generate power. All that was needed was a modification of Enrico Fermi's original reactor to control the heat released by the fission process to turn the blades of a turbine and drive a generator.

Superconductors

Imagine the possibilities of a wire with infinitely low resistance; electricity could flow for hundreds of miles with no loss of power and efficiency ratings could increase beyond anyone's wildest dreams. In theory, superconductors perform these feats. In practice, the industry still is moving toward those goals. In 1986, Georg Bednorz and Alex Muller, working in IBM's research labs, took the first steps when they developed the first high-temperature superconductor (HTS). Since then, superconductivity remains a top R&D priority for utilities around the world.

In fact, beyond transmission applications, superconductivity will someday be used in such instruments as substation transformers that will be protected by HTS fault current limiters.

Transformers

Soon after the limitation of direct current to transmit power over long distances was exposed, the race was on to find a technology that would make power generation more practical. Nikola Tesla's polyphase alternating current system, when combined with William Stanley's transformer, appeared to be the pot of gold.

Stanley's transformer was based on the simple principle of induction in which a current in one coil would induce the exact same current in another coil. If the number of windings on the second coil were increased, the voltage of the second current would increase proportionally. This discovery -- combined with the observation that a lower current at a higher voltage resulted in less power loss -- yielded a system that overcame the majority of direct current's flaws.

TO SUBSCRIBE TO THE ELECTRONIC NEWSLETTER

This newsletter is only available via e-mail or the Section's web page at <http://iee.cincinnati.fuse.net/> with the exception of new Section members (one issue only) or members who have specifically requested a copy be delivered through the U. S. Mail.

If you are a new Section member and would like to get this newsletter electronically, please contact Bob Morrison (Editor) at **513-287-3697** or by e-mail at j.r.morrison@ieee.org. Provide your name and member number. In case there are questions, please include a daytime telephone number as well.

If you would like the "Snail Mail" version, you must contact Bob Morrison via the above means or call the

Take a leadership role in our technological society.

***Are you thinking about a career change or
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Northern Kentucky University, visit the
MST homepage at www.nku.edu/~mst,
or call (859) 572-6352.

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IEEE NEWS

IEEE-USA-Supported Bill to Strengthen NSF Clears Senate

WASHINGTON (November 25, 2002) - The National Science Foundation Authorization Act of 2002 (H.R. 4664), which IEEE-USA has supported since its introduction in May, cleared the Senate on November 14 and heads to the President for his signature.

The House Science Committee bill, introduced by Nick Smith (R-Mich.) and bipartisan cosponsors, authorizes a 15 percent annual increase for the National Science Foundation (NSF) in FY 2003-2005. This puts the NSF budget on track to double by FY 2007 to \$9,839,262,000.

"NSF funds cutting-edge research in engineering and computing that are of tremendous value and interest to U.S. IEEE members, and ultimately beneficial to all Americans," IEEE-USA President LeEarl Bryant said. "These funds will help maintain a viable U.S. technology workforce, which is critical to our nation's economic competitiveness and security."

Other highlights of H.R. 4664 include authorization of the President's Math and Science Education Partnership Program in elementary and secondary schools; new research into plant biotechnology; and the Tech Talent program to address the decline in the technical workforce and to improve undergraduate math and science education.

"These programs will help NSF address new challenges, including information technology, nanotechnology and homeland security, and could help offset the recent declines in Defense Department support for electrical and electronics-related research at universities," IEEE-USA Vice President for Technology Policy Ralph W. Wyndrum said.

Research Subcommittee Ranking Member Eddie Bernice Johnson (D-Texas) praised the bill. "This is truly an historic piece of legislation for science policy in the United States that will have profound and lasting effect on the future prosperity of our nation," she said.

An independent agency established by the National Science Foundation Act of 1950 to advance scientific and engineering progress in the United States, NSF is the government's premier research agency. It supports 46 percent of the basic research in engineering performed at universities and colleges, and helps train more than 25,000 graduate students each year.

"Scientific research at NSF has advanced science and technology and greatly enhanced our lives," Rep. Lamar Smith (R-Texas) said. "Investment in the sciences is an investment in our future."

E-Week 2003 Kits Now Available

WASHINGTON (November 27, 2002) - Planning kits for National Engineers Week 2003 (February 16-22) are now available from IEEE-USA and the E-Week Website.

The kit will guide you on conducting E-Week activities in your area. It includes 50 ways you can participate in E-Week, a planning calendar, publicity program, E-Week poster and a product catalog and order form.

The Discover "E" program provides information for engineers who visit classrooms to help improve student interest in science, technology, engineering and mathematics. Information is also included on Introduce a Girl to Engineering Day and the Future City Competition, which IEEE-USA introduced to National Engineers Week in 1993.

To request your kit, contact Helen Hall at 1-202-785-0017, ext. 8354 or h.hall@ieee.org. You can also get one by visiting <https://shop.eweek.org/eweek/> and clicking "Promotional Materials."

IEEE-USA President Describes Threats Facing U.S. Engineers at Summit on the U.S. Science and Engineering Workforce

WASHINGTON (December 2, 2002) - IEEE-USA President LeEarl Bryant pointed to recent sharp increases in engineering unemployment and declining real wages as serious threats to the long-term viability of U.S. engineering careers at the National Academies' Pan Organizational Summit on the U.S. Science and Engineering Workforce last month.

Bryant expressed serious concerns about the potentially adverse, long-term effects of workforce utilization practices that are making engineering jobs less secure and engineering careers more tenuous than ever. She cited the increasing reliance by employers on temporary foreign workers, non-standard employment arrangements and outsourcing of engineering work to lower cost, offshore locations. Non-standard employment arrangements utilize contingent, part-time, or contract workers instead of regular, full-time employees to reduce labor costs and facilitate just-in-time delivery of high value-added products and services, Bryant explained.

Unfortunately, management's short-term emphasis on labor flexibility seems to be creating long-term disincentives to continuing participation by many of the nation's best and brightest in America's engineering enterprise, the IEEE-USA president said.

Many aspiring and experienced engineers, when confronted with the prospect of periodic unemployment and flat or declining real wages, are voting with their feet and opting for careers in fields that offer more long-term job security and higher "real wages" fields such as business administration, law and medicine.

Other important issues highlighted by the IEEE-USA president included the need to: provide timely information on engineering labor market conditions; strengthen math and science education in grades K-12; expand engineering educational and employment opportunities for women, minorities, handicapped and older Americans; improve lifelong learning (continuing education) for practicing engineers and scientists; and reform the nation's educational and employment-based immigration system.

For the entire work, go to <http://www.ieeeusa.org/forum/POLICY/12nov02.pdf>

The November 11-12 invitational meeting was hosted by the National Academies' Government-University-Industry Research Roundtable (GUIRR) and attended by representatives from more than 40 national organizations, including business associations, educational institutions, government agencies and professional societies. Its purpose was to enable stakeholders to identify causes and recommend solutions to problems affecting supply and demand for U.S. scientists and engineers. For more information on GUIRR, go to <http://www7.nationalacademies.org/guirr/>.

**"ACCESSING IEEE TECHNICAL INFORMATION" - FREE WEB
CONFERENCE COMING IN FEBRUARY**

The IEEE will host a live Web Conference, "Accessing IEEE Technical Information: The IEEE Member Digital Library" on February 11, 2003 at 7:30am PST/10:30am EST, from the International Solid-State Circuits Conference in San Francisco, CA, USA. As Internet attendance is limited, IEEE sections and chapters are encouraged to invite members to central locations to view the Web Conference to allow as many members to view the presentation as possible.

IEEE members and others interested in viewing the free Web conference can register at <http://www.ieee.org/ieeemdl>

For more information on the Web Conference, please contact Barbara Soifer, IEEE Sales & Marketing, at b.soifer@ieee.org or IEEE Member Services at mdlhelp@ieee.org.

**The IEEE Cincinnati Section Executive Committee
Member Names and Phone Numbers**

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- Vice Chair	
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